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 TITLE: Manufacture of fire-resistant polyesters
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AB The title polyesters are manufactured without lowering mech. strength by copolyng. 1-10 mol% (based on total acid components) ester-forming functional group-containing unsatd. compds. to polyesters at $\leq 260^\circ$ to intrinsic viscosity 0.25-0.48, then polycondensing with 0.7-1.0:1 (equivalent ratio, based on unsatd. bonds of the copolymd. unsatd. compds.) $\text{PHR}_1\text{R}_2(\text{O})_n$ ($\text{R}_1, \text{R}_2 = \text{C}_1\text{-20}$ alkyl, $\text{C}_6\text{-20}$ aryl, $\text{C}_1\text{-20}$ alkoxy, $\text{C}_6\text{-20}$ aryloxy; R_1R_2 may be bonded to form a ring; $n = 0, 1$) at $\leq 270^\circ$ to intrinsic viscosity ≥ 0.5 . Thus, a slurry of (1.6:1, mol ratio) ethylene glycol (I) and terephthalic acid was added to bis(β -hydroxyethyl) terephthalate and its oligomers and heated at 255° , then treated with (1:0.8, mol. ratio) maleic anhydride (II)-I mixture (II content is 2.5 mol% of total acid components) at 260° in the presence of GeO_2 to give a polyester with intrinsic viscosity 0.45, which was treated with 2.0 mol% (based on total acid components) 9,10-dihydro-9-oxa-10-phosphophenanthrene-10-oxide at 260° and 0.3 torr to give a fire-resistant polyester with intrinsic viscosity 0.65 and m.p. 250° showing good strength.